Reviewer's report

Title: Inadequate prenatal care and its association with adverse pregnancy outcomes: A comparison of indices

Version: 2 Date: 17 July 2007

Reviewer: Arden S Handler

Reviewer's report:

General
The authors present an analysis of the utilization of prenatal care in Winnipeg, Canada from 1991-2000. They examine patterns of utilization using four indices that have been used or are in current use in the U.S.: the Kessner index, the GINDEX, the R-GINDEX and the APNCU (Kotelchuck index). This article is important as Canada has no national data on utilization of adequate prenatal care. The article will be better served by only comparing the two indices that are currently considered to be the state of the art in the U.S.: the R-GINDEX and the APNCU. It will also be better served by presenting the findings, discussing the complexity of prenatal care measurement, and suggesting that a gestational-age specific examination of the indices is potentially useful, not calling for the discontinuation of these indices.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached.)

1) An objective such as "to determine the presence of gestational age bias among the four indices" assumes a priori such bias exists. There is a need to change the language so that the authors' "biases" are not revealed. Language such as "assess whether or not and to what extent gestational age bias exists" is more appropriate.

2) Given that the Kessner index and the GINDEX are based on the flawed coding strategy of only requiring "9" visits for a determination of adequacy and that there is an agreement in the field that both the R-GINDEX and the APNCU are qualitatively better indices, I do not think the article should include all four indices. I would focus only on the two indices that actually reflect the current state of the art with respect to prenatal care utilization indices, the R-GINDEX and the APNCU. A focus on these two indices would allow the reader to get a much better handle on what the authors are trying to do and the meaning of the results presented.

3) The authors call for the discontinuation of the prenatal care indices (R-GINDEX and APNCU) and suggest the use of gestational-age specific analyses. As noted by Kotelchuck in his response to Koroukian and Rimm, 2003, the APNCU does not "adjust" for gestational age; "the APNCU Index merely compensates for
expected number of PNC visits at each gestational age." When Kotelchuck presents the APNCU by gestational age, he finds that within a gestational age stratum, the higher the adequacy of utilization, the better the birth outcomes. This is equivalent to comparing a "cohort" analysis to "cross-sectional" data -- an elevated risk for low and high prenatal care users (the cross-sectional line) does not necessarily mean that the relationship between "more pnc" and pregnancy outcomes doesn't exist within each "cohort" (gestational age group). In addition, it might be expected that the relationship between adequacy of prenatal care and birth outcomes using these indices will vary by gestational age (as found in this article) given the fact that "adequate" prenatal care compared to "inadequate" for a preterm infant has a different meaning than "adequate" prenatal care compared to "inadequate" for a term infant.

As such, given the complexity in studying prenatal care use, calling for the discontinuation of the prenatal care indices (particularly, R-GINDEX and APNCU) seems unusually strong, and premature given that there is no routine use of such indices in Canada. I would eliminate such a call from this article and also rethink the alternative method-- is gestational age specific analysis enough? Would the authors recommend the method of Koroukian and Rimm as referenced in their article? Koroukian and Rimm used gestational age specific analyses that were unadjusted and did not account for the timing of initiation of prenatal care. Is this truly what the authors want to recommend?

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests. Arden Handler